

## ABSTRACT

### METHODS AND SYSTEMS OF NETWORK MANAGEMENT

A network management system (NMS) automatically models a path for a customer's services from a terminating unit through elements typically on a link-by-link basis, across networks if appropriate, to a network service provider (NSP) or Internet service provider (ISP). The path may be a private virtual circuit or connection (PVC), and it may traverse an "overall network" including other networks such as an asymmetric digital subscriber line (ADL) service or sub-networks. To model a path, the NMS creates a topology including the elements and links in the overall network and respective features, functions, characteristics, and capacities thereof. The topology allows the NMS to speedily, efficiently, and automatically provision a customer's service from the terminating unit to connection to the customer's selected NSP or ISP for Internet access. In addition, the topology allows the NMS to implement fault management functions, diagnostic functions, capacity and inventory management functions, and service management functions related to the elements, links, networks, and sub-networks of the overall network.

Further, the creation of the topology or overall model network allows for the automation of many of the previously mentioned actions so that many customers may be quickly and efficiently provisioned with services or other actions taken on a larger

scale and more efficient than previously possible through the manual operations described in the background above.

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